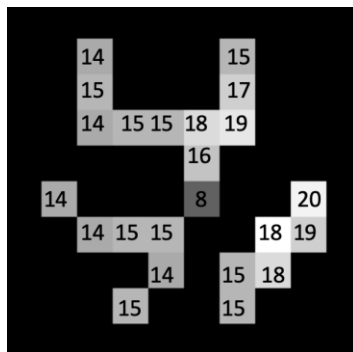


**Tutor:** Qiuxia Lin  
[qiuxia@comp.nus.edu.sg](mailto:qiuxia@comp.nus.edu.sg)

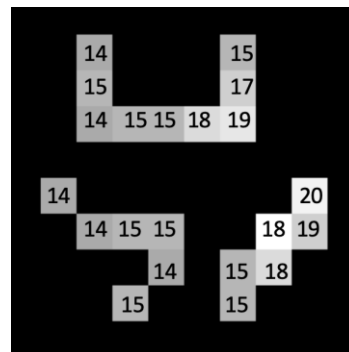
### Theoretical:

#### Canny Edge Non-Maximum Suppression (Lecture 3)

- Comparison of using and not using interpolation



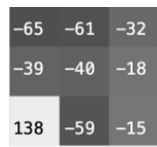
(wo interpolation)



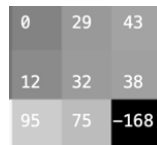
(w interpolation)

#### A1:

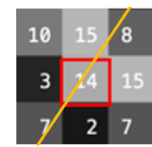
When w/o interpolation:



the gradient orientation of  
 pixel(2,3) is -40



the gradient orientation of  
 pixel(4,5) is 32



14 > 8 and 14 > 7 so we keep 14



16 > 15 and 16 > 2 so we keep 16

When w/ interpolation:



$$\begin{aligned}
 x &= \tan(40^\circ) \approx 0.839 \\
 (7 - 2) * (0.839) + 2 &= 6.195 \\
 (8 - 15) * (0.839) + 15 &= 9.127
 \end{aligned}$$

14 > 6.195 and 14 > 9.127 so we keep 14



$$\begin{aligned}
 x &= \tan(32^\circ) \approx 0.625 \\
 (2 - 8) * (0.625) + 8 &= 4.25 \\
 (15 - 18) * (0.625) + 18 &= 16.125
 \end{aligned}$$

16 > 4.25 but 16 < 16.125 so we drop 16